



SEQUENCE LISTING

<11> MARGOTIN, DANIELA
PHAM, NAM

<120> RAS ACTIVATOR NUCLEIC ACID MOLECULES, POLYPEPTIDES AND METHODS OF USE

<130> DWW-5001-US

<140> 09/911,826
<141> 2001-07-20

<150> PCT/CA00/00042
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<150> CA 2,259,830
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<170> PatentIn Ver. 3.2

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Tyr Met Lys Gly Val Met Arg Thr Lys Val Asp Asp Cys Gln Phe Val
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Cys Ile Ala Gln Gln Asp Tyr Cys Arg Ile Leu Asn Gln Val Glu Lys
225         230         235         240

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Asn Met Gln Lys Val Glu Glu Glu Gly Glu Ile Val Met Val Lys Glu
245 250 255

His Arg Glu Leu Asp Arg Thr Gly Thr Arg Lys Gly His Ile Val Ile
260 265 270

Lys Gly Thr Ser Glu Arg Leu Thr Met His Leu Val Glu Glu His Ser
275 280 285

Val Val Asp Pro Thr Phe Ile Glu Asp Phe Leu Leu Thr Tyr Arg Thr
290 295 300

Phe Leu Ser Ser Pro Met Glu Val Gly Lys Lys Leu Leu Glu Trp Phe
305 310 315 320

Asn Asp Pro Ser Leu Arg Asp Lys Val Thr Arg Val Val Leu Leu Trp
325 330 335

Val Asn Asn His Phe Asn Asp Phe Glu Gly Asp Pro Ala Met Thr Arg
340 345 350

Phe Leu Glu Glu Phe Glu Asn Asn Leu Glu Arg Glu Lys Met Gly Gly
355 360 365

His Leu Arg Leu Leu Asn Ile Ala Cys Ala Ala Lys Ala Lys Arg Arg
370 375 380

Leu Met Thr Leu Thr Lys Pro Ser Arg Glu Ala Pro Leu Pro Phe Ile
385 390 395 400

Leu Leu Gly Gly Ser Glu Lys Gly Phe Gly Ile Phe Val Asp Ser Val
405 410 415

Asp Ser Gly Ser Lys Ala Thr Glu Ala Gly Leu Lys Arg Gly Asp Gln
420 425 430

Ile Leu Glu Val Asn Gly Gln Asn Phe Glu Asn Ile Gln Leu Ser Lys
435 440 445

Ala Met Glu Ile Leu Arg Asn Asn Thr His Leu Ser Ile Thr Val Lys
450 455 460

Thr Asn Leu Phe Val Phe Lys Glu Leu Leu Thr Arg Leu Ser Glu Glu
465 470 475 480

Lys Arg Asn Gly Ala Pro His Leu Pro Lys Ile Gly Asp Ile Lys Lys
485 490 495

Ala Ser Arg Tyr Ser Ile Pro Asp Leu Ala Val Asp Val Glu Gln Val
500 505 510

Ile Gly Leu Glu Lys Val Asn Lys Lys Ser Lys Ala Asn Thr Val Gly
515 520 525

Gly Arg Asn Lys Leu Lys Lys Ile Leu Asp Lys Thr Arg Ile Ser Ile
530 535 540

Leu Pro Gln Lys Pro Tyr Asn Asp Ile Gly Ile Gly Gln Ser Gln Asp
 545 550 555 560

 Asp Ser Ile Val Gly Leu Arg Gln Thr Lys His Ile Pro Thr Ala Leu
 565 570 575

 Pro Val Ser Gly Thr Leu Ser Ser Ser Asn Pro Asp Leu Leu Gln Ser
 580 585 590

 His His Arg Ile Leu Asp Phe Ser Ala Thr Pro Asp Leu Pro Asp Gln
 595 600 605

 Val Leu Arg Val Phe Lys Ala Asp Gln Gln Ser Arg Tyr Ile Met Ile
 610 615 620

 Ser Lys Asp Thr Thr Ala Lys Glu Val Val Ile Gln Ala Ile Arg Glu
 625 630 635 640

 Phe Ala Val Thr Ala Thr Pro Asp Gln Tyr Ser Leu Cys Glu Val Ser
 645 650 655

 Val Thr Pro Glu Gly Val Ile Lys Gln Arg Arg Leu Pro Asp Gln Leu
 660 665 670

 Ser Lys Leu Ala Asp Arg Ile Gln Leu Ser Gly Arg Tyr Tyr Leu Lys
 675 680 685

 Asn Asn Met Glu Thr Glu Thr Leu Cys Ser Asp Glu Asp Ala Gln Glu
 690 695 700

 Leu Leu Arg Glu Ser Gln Ile Ser Leu Leu Gln Leu Ser Thr Val Glu
 705 710 715 720

 Val Ala Thr Gln Leu Ser Met Arg Asn Phe Glu Leu Phe Arg Asn Ile
 725 730 735

 Glu Pro Thr Glu Tyr Ile Asp Asp Leu Phe Lys Leu Arg Ser Lys Thr
 740 745 750

 Ser Cys Ala Asn Leu Lys Arg Phe Glu Glu Val Ile Asn Gln Glu Thr
 755 760 765

 Phe Trp Val Ala Ser Glu Ile Leu Arg Glu Thr Asn Gln Leu Lys Arg
 770 775 780

 Met Lys Ile Ile Lys His Phe Ile Lys Ile Ala Leu His Cys Arg Glu
 785 790 795 800

 Cys Lys Asn Phe Asn Ser Met Phe Ala Ile Ile Ser Gly Leu Asn Leu
 805 810 815

 Ala Pro Val Ala Arg Leu Arg Thr Thr Trp Glu Lys Leu Pro Asn Lys
 820 825 830

 Tyr Glu Lys Leu Phe Gln Asp Leu Gln Asp Leu Phe Asp Pro Ser Arg
 835 840 845

Asn Met Ala Lys Tyr Arg Asn Val Leu Asn Ser Gln Asn Leu Gln Pro
 850 855 860

 Pro Ile Ile Pro Leu Phe Pro Val Ile Lys Lys Asp Leu Thr Phe Leu
 865 870 875 880

 His Glu Gly Asn Asp Ser Lys Val Asp Gly Leu Val Asn Phe Glu Lys
 885 890 895

 Leu Arg Met Ile Ala Lys Glu Ile Arg His Val Gly Arg Met Ala Ser
 900 905 910

 Val Asn Met Asp Pro Ala Leu Met Phe Arg Thr Arg Lys Lys Lys Trp
 915 920 925

 Arg Ser Leu Gly Ser Leu Ser Gln Gly Ser Thr Asn Ala Thr Val Leu
 930 935 940

 Asp Val Ala Gln Thr Gly Gly His Lys Lys Arg Val Arg Arg Ser Ser
 945 950 955 960

 Phe Leu Asn Ala Lys Lys Leu Tyr Glu Asp Ala Gln Met Ala Arg Lys
 965 970 975

 Val Lys Gln Tyr Leu Ser Asn Leu Glu Leu Glu Met Asp Glu Glu Ser
 980 985 990

 Leu Gln Thr Leu Ser Leu Gln Cys Glu Pro Ala Thr Asn Thr Leu Pro
 995 1000 1005

 Lys Asn Pro Gly Asp Lys Lys Pro Val Lys Ser Glu Thr Ser Pro Val
 1010 1015 1020

 Ala Pro Arg Ala Gly Ser Gln Gln Lys Ala Gln Ser Leu Pro Gln Pro
 1025 1030 1035 1040

 Gln Gln Gln Pro Pro Pro Ala His Lys Ile Asn Gln Gly Leu Gln Val
 1045 1050 1055

 Pro Ala Val Ser Leu Tyr Pro Ser Arg Lys Lys Val Pro Val Lys Asp
 1060 1065 1070

 Leu Pro Pro Phe Gly Ile Asn Ser Pro Gln Ala Leu Lys Lys Ile Leu
 1075 1080 1085

 Ser Leu Ser Glu Glu Gly Ser Leu Glu Arg His Lys Lys Gln Ala Glu
 1090 1095 1100

 Asp Thr Ile Ser Asn Ala Ser Ser Gln Leu Ser Ser Pro Pro Thr Ser
 1105 1110 1115 1120

 Pro Gln Ser Ser Pro Arg Lys Gly Tyr Thr Leu Ala Pro Ser Gly Thr
 1125 1130 1135

 Val Asp Asn Phe Ser Asp Ser Gly His Ser Glu Ile Ser Ser Arg Ser
 1140 1145 1150

Ser Ile Val Ser Asn Ser Ser Phe Asp Ser Val Pro Val Ser Leu His
 1155 1160 1165

 Asp Glu Arg Arg Gln Arg His Ser Val Ser Ile Val Glu Thr Asn Leu
 1170 1175 1180

 Gly Met Gly Arg Met Glu Arg Arg Thr Met Ile Glu Pro Asp Gln Tyr
 1185 1190 1195 1200

 Ser Leu Gly Ser Tyr Ala Pro Met Ser Glu Gly Arg Gly Leu Tyr Ala
 1205 1210 1215

 Thr Ala Thr Val Ile Ser Ser Pro Ser Thr Glu Glu Leu Ser Gln Asp
 1220 1225 1230

 Gln Gly Asp Arg Ala Ser Leu Asp Ala Ala Asp Ser Gly Arg Gly Ser
 1235 1240 1245

 Trp Thr Ser Cys Ser Ser Gly Ser His Asp Asn Ile Gln Thr Ile Gln
 1250 1255 1260

 His Gln Arg Ser Trp Glu Thr Leu Pro Phe Gly His Thr His Phe Asp
 1265 1270 1275 1280

 Tyr Ser Gly Asp Pro Ala Gly Leu Trp Ala Ser Ser His Met Asp
 1285 1290 1295

 Gln Ile Met Phe Ser Asp His Ser Thr Lys Tyr Asn Arg Gln Asn Gln
 1300 1305 1310

 Ser Arg Glu Ser Leu Glu Gln Ala Gln Ser Arg Ala Ser Trp Ala Ser
 1315 1320 1325

 Ser Thr Gly Tyr Trp Gly Glu Asp Ser Glu Gly Asp Thr Gly Thr Ile
 1330 1335 1340

 Lys Arg Arg Gly Gly Lys Asp Val Ser Ile Glu Ala Glu Ser Ser Ser
 1345 1350 1355 1360

 Leu Thr Ser Val Thr Glu Glu Thr Lys Pro Val Pro Met Pro Ala
 1365 1370 1375

 His Ile Ala Val Ala Ser Ser Thr Thr Lys Gly Leu Ile Ala Arg Lys
 1380 1385 1390

 Glu Gly Arg Tyr Arg Glu Pro Pro Pro Thr Pro Pro Gly Tyr Ile Gly
 1395 1400 1405

 Ile Pro Ile Thr Asp Phe Pro Glu Gly His Ser His Pro Ala Arg Lys
 1410 1415 1420

 Pro Pro Asp Tyr Asn Val Ala Leu Gln Arg Ser Arg Met Val Ala Arg
 1425 1430 1435 1440

 Ser Ser Asp Thr Ala Gly Pro Ser Ser Val Gln Gln Pro His Gly His
 1445 1450 1455

Pro Thr Ser Ser Arg Pro Val Asn Lys Pro Gln Trp His Lys Pro Asn
1460 1465 1470

Glu Ser Asp Pro Arg Leu Ala Pro Tyr Gln Ser Gln Gly Phe Ser Thr
1475 1480 1485

Glu Glu Asp Glu Asp Glu Gln Val Ser Ala Val Gly Thr Asp Phe Ser
1490 1495 1500

Gly Ser Arg Ala Ser His Leu Lys Gly Glu His Lys Lys Thr Ser Ala
1505 1510 1515 1520

Leu Glu Pro Trp Asn Ser His Ser Glu Asp Gly Gly Pro Val Cys Leu
1525 1530 1535

Leu

<210> 3

<211> 801

<212> DNA

<213> Mus musculus

<400> 3

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agcatggtgc ccgtgactac agaggaagcc	aaacctgtcc	ctatgcctgc	ccacatacgct	180
gtgacgcccga gcactaccaa gggactcatc	gcacggaaagg	aaggcaggt	ccgggagccg	240
cctcccacac ctccaggctta cgtgggcata	cccattgccg	atttcccaga	agggccttc	300
caccggccca ggaagcccccc	ggattacaac	gtggccctgc	agcggtcccg	360
cggcccactg aggccccggc	accggggccag	acgcccgcctg	cagccgcagc	420
ggcagcaagc cacagtggca caagccccagc	gacgcagacc	cacgcctcgc	gcccttc	480
ccgcaggctt cgccaggagcg	gaggaggacg	aagatgaaca	agtgtctgct	540
caggctcctt gatccacagt	gagccaccca	aaggagagca	caagaagacg	600
tggagccttgc acgcacat	ctgaggatgg	tggaccagtt	tgcctccttc	660
agcagcatgg ggtttcttct	ccccttcttc	ctttccctt	tgcatgtgaa	720
gaaattgccc tggcactttg	cagacttgtt	gcttgaatg	cacagcccag	780
gctgctgcct	gccacgtcac	g		801

<210> 4

<211> 281

<212> PRT

<213> Homo sapiens

<220>

<221> MISC_FEATURE

<222> (1)..(202)

<223> fragment 1 of reading frame 1

<220>

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<222> (203)..(225)

<223> fragment 2 of reading frame 1

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<221> MISC_FEATURE
<222> (226)..(236)
<223> fragment 3 of reading frame 1

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<222> (237)..(267)
<223> fragment 4 of reading frame 1

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<222> (268)..(274)
<223> fragment 5 of reading frame 1

<220>
<221> MISC_FEATURE
<222> (275)..(281)
<223> fragment 6 of reading frame 1

<400> 4

Thr Lys Gly Asn Lys Ser Trp Ser Ser Thr Ala Val Ala Ala Ala Leu
1 5 10 15

Glu Leu Val Asp Pro Pro Gly Cys Arg Asn Ser Ser Gly Gly Lys Asp
20 25 30

Val Ser Ala Glu Ala Glu Ser Ser Ser Met Val Pro Val Thr Thr Glu
35 40 45

Glu Ala Lys Pro Val Pro Met Pro Ala His Ile Ala Val Thr Pro Ser
50 55 60

Thr Thr Lys Gly Leu Ile Ala Arg Lys Glu Gly Arg Tyr Arg Glu Pro
65 70 75 80

Pro Pro Thr Pro Pro Gly Tyr Val Gly Ile Pro Ile Ala Asp Phe Pro
85 90 95

Glu Gly Pro Cys His Pro Ala Arg Lys Pro Pro Asp Tyr Asn Val Ala
100 105 110

Leu Gln Arg Ser Arg Met Val Ala Arg Pro Thr Glu Ala Pro Ala Pro
115 120 125

Gly Gln Thr Pro Pro Ala Ala Ala Ser Arg Pro Gly Ser Lys Pro
130 135 140

Gln Trp His Lys Pro Ser Asp Ala Asp Pro Arg Leu Ala Pro Phe Gln

145	150	155	160
Ala Ala Ser His Ser Gly Thr Ser Pro Ala Thr Gln Thr His Ala Ser			
165	170	175	
Arg Pro Ser Arg Gln Ala Ser Gln Glu Arg Arg Arg Thr Lys Met Asn			
180	185	190	
Lys Cys Leu Leu Phe Glu Ala Gln Ala Pro Ser Thr Val Ser His Pro			
195	200	205	
Lys Glu Ser Thr Arg Arg Arg Pro Lys Pro Trp Ser Leu Gly Thr His			
210	215	220	
Ile Gly Trp Trp Thr Ser Leu Pro Pro Ser Leu Pro Ser Ser Met Gly			
225	230	235	240
Leu Leu Leu Pro Phe Phe Leu Ser Pro Leu His Val Lys Tyr Cys Glu			
245	250	255	
Glu Ile Ala Leu Ala Leu Cys Arg Leu Val Ala Asn Ala Gln Pro Ser			
260	265	270	
Ser Pro Ala Ala Ala Cys His Val Thr			
275	280		

<210> 5
<211> 237
<212> PRT
<213> Homo sapiens

<220>
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<223> fragment 1 of reading frame 2

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<222> (16)..(16)
<223> fragment 2 of reading frame 2

<220>
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<222> (17)..(42)
<223> fragment 3 of reading frame 2

<220>
<221> MISC_FEATURE

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<222> (43)..(55)
<223> fragment 4 of reading frame 2

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<223> fragment 5 of reading frame 2

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<223> fragment 6 of reading frame 2

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<222> (146)..(159)
<223> fragment 7 of reading frame 2

<220>
<221> MISC_FEATURE
<222> (160)..(207)
<223> fragment 8 of reading frame 2

<220>
<221> MISC_FEATURE
<222> (208)..(237)
<223> fragment 9 of reading frame 2

<400> 5
Leu Lys Gly Thr Lys Ala Gly Ala Pro Pro Arg Trp Arg Pro Leu Asn
1 5 10 15

Trp Ile Pro Arg Ala Ala Gly Ile Gln Ala Val Gly Arg Met Ser Pro
20 25 30

Leu Arg Gln Arg Ala Ala Ala Trp Cys Pro Leu Gln Arg Lys Pro Asn
35 40 45

Leu Ser Leu Cys Leu Pro Thr Leu Arg Arg Ala Leu Pro Arg Asp Ser
50 55 60

Ser His Gly Arg Lys Ala Gly Thr Gly Ser Arg Leu Pro His Leu Gln
65 70 75 80

Ala Thr Trp Ala Ser Pro Leu Pro Ile Ser Gln Lys Gly Leu Ala Thr
85 90 95

Arg Pro Gly Ser Pro Arg Ile Thr Thr Trp Pro Cys Ser Gly Pro Ala
100 105 110

```

Trp Trp His Gly Pro Leu Arg Pro Arg His Arg Ala Arg Arg Arg Leu
115 120 125

Gln Pro Gln Pro Ala Gly Arg Arg Leu Arg Arg Ser Gly Gly Gly Arg
130 135 140

Arg Thr Ser Val Cys Cys Leu Arg Arg Leu Leu Asp Pro Gln Ala
145 150 155 160

Thr Gln Arg Arg Ala Gln Glu Asp Val Pro Ser Leu Gly Ala Leu Ala
165 170 175

Arg Thr Ser Glu Asp Gly Gly Pro Val Cys Leu Leu Pro Cys Leu Lys
180 185 190

Ala Ala Trp Gly Phe Phe Ser Pro Ser Ser Phe Pro Leu Cys Met Asn
195 200 205

Thr Val Lys Lys Leu Pro Trp His Phe Ala Asp Leu Leu Leu Glu Met
210 215 220

His Ser Pro Ala Ala Pro Glu Leu Leu Pro Ala Thr Ser
225 230 235

<210> 6
<211> 261
<212> PRT
<213> Homo sapiens

<220>
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<222> (1)..(33)
<223> fragment 1 of reading frame 3

<220>
<221> MISC_FEATURE
<222> (34)..(120)
<223> fragment 2 of reading frame 3

<220>
<221> MISC_FEATURE
<222> (121)..(174)
<223> fragment 3 of reading frame 3

<220>
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<222> (175)..(234)
<223> fragment 4 of reading frame 3

<220>
<221> MISC_FEATURE
<222> (235)..(261)
<223> fragment 5 of reading frame 3

<400> 6

Arg Glu Gln Lys Leu Glu Leu His Arg Gly Gly Arg Ser Arg Thr
1 5 10 15

Ser Gly Ser Pro Gly Leu Gln Glu Phe Lys Arg Trp Glu Gly Cys Leu
20 25 30

Arg Gly Arg Glu Gln Gln His Gly Ala Arg Asp Tyr Arg Gly Ser Gln
35 40 45

Thr Cys Pro Tyr Ala Cys Pro His Ser Cys Asp Ala Glu His Tyr Gln
50 55 60

Gly Thr His Arg Thr Glu Gly Arg Gln Val Pro Gly Ala Ala Ser His
65 70 75 80

Thr Ser Arg Leu Arg Gly His Pro His Cys Arg Phe Pro Arg Arg Ala
85 90 95

Leu Pro Pro Gly Gln Glu Ala Pro Gly Leu Gln Arg Gly Pro Ala Ala
100 105 110

Val Pro His Gly Gly Thr Ala His Gly Pro Gly Thr Gly Pro Asp Ala
115 120 125

Ala Cys Ser Arg Ser Gln Pro Ala Gly Gln Gln Ala Thr Val Ala Gln
130 135 140

Ala Gln Arg Arg Arg Pro Thr Pro Arg Ala Leu Pro Gly Ala Gly Phe
145 150 155 160

Ala Gly Ala Glu Glu Asp Glu Asp Glu Gln Val Ser Ala Val Gly Ala
165 170 175

Gly Ser Leu Ile His Ser Glu Pro Pro Lys Gly Glu His Lys Lys Thr
180 185 190

Ser Gln Ala Leu Glu Pro Trp His Ala His Leu Arg Met Val Asp Gln
195 200 205

Phe Ala Ser Phe Pro Ala Leu Lys Gln His Gly Ala Ser Ser Pro Leu
210 215 220

Leu Pro Phe Pro Phe Ala Cys Glu Ile Leu Arg Asn Cys Pro Gly Thr
225 230 235 240

Leu Gln Thr Cys Cys Leu Lys Cys Thr Ala Gln Gln Pro Leu Ser Cys
245 250 255

Cys Leu Pro Arg His
260

<210> 7
<211> 307
<212> PRT
<213> Drosophila melanogaster

<400> 7
Ser Asn Val His Phe Leu His Leu Asn Ala Tyr Glu Leu Ala Ile Gln
1 5 10 15

Leu Thr Leu Gln Asp Phe Ala Asn Phe Arg Gln Ile Glu Ser Thr Glu
20 25 30

Tyr Val Asp Glu Leu Phe Glu Leu Arg Ser Arg Tyr Gly Val Pro Met
35 40 45

Leu Ser Lys Phe Ala Glu Leu Val Asn Arg Glu Met Phe Trp Val Val
50 55 60

Ser Glu Ile Cys Ala Glu His Asn Ile Val Arg Arg Met Lys Ile Val
65 70 75 80

Lys Gln Phe Ile Lys Ile Ala Arg His Cys Lys Glu Cys Arg Asn Phe
85 90 95

Asn Ser Met Phe Ala Ile Val Ser Gly Leu Gly His Gly Ala Val Ser
100 105 110

Arg Leu Arg Gln Thr Trp Glu Lys Leu Pro Ser Lys Tyr Gln Arg Leu
115 120 125

Phe Asn Asp Leu Gln Asp Leu Met Asp Pro Ser Arg Asn Met Ser Lys
130 135 140

Tyr Arg Gln Leu Val Ser Ala Glu Leu Leu Ala Gln His Pro Ile Ile
145 150 155 160

Pro Phe Tyr Pro Ile Val Lys Lys Asp Leu Thr Phe Ile His Leu Gly
165 170 175

Asn Asp Thr Arg Val Asp Gly Leu Val Asn Phe Glu Lys Leu Arg Met
 180 185 190
 Leu Ala Lys Glu Val Arg Leu Leu Thr His Met Cys Ser Ser Pro Tyr
 195 200 205
 Asp Leu Leu Ser Ile Leu Glu Leu Lys Gly Gln Ser Pro Ser Asn Ala
 210 215 220
 Leu Phe Ser Leu Asn Gln Met Ser Ala Ser Gln Ser Asn Ala Ala Ala
 225 230 235 240
 Gly Thr Val Ile Ala Ala Asn Ala Gly Gln Ala Thr Ile Lys Arg Arg
 245 250 255
 Lys Lys Ser Thr Ala Ala Pro Asn Pro Lys Lys Met Phe Glu Glu Ala
 260 265 270
 Gln Met Val Arg Arg Val Lys Ala Tyr Leu Asn Ser Leu Lys Ile Leu
 275 280 285
 Ser Asp Glu Asp Leu Leu His Lys Phe Ser Leu Glu Cys Glu Pro Ala
 290 295 300
 His Gly Ser
 305

<210> 8
 <211> 270
 <212> PRT
 <213> Homo sapiens

<400> 8
 Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu Ala Gly Gln
 1 5 10 15
 Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His Gln Val Glu
 20 25 30
 Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp Val Thr Thr
 35 40 45
 Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp
 50 55 60
 Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro Arg Ala Gln
 65 70 75 80
 Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala His Leu Lys Glu Gln Lys
 85 90 95
 Asn Leu Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser Asn Ser Ala
 100 105 110
 Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His Lys Val Arg

115	120	125	
Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser Trp Asn His			
130	135	140	
Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro Val Ile Pro			
145	150	155	160
Phe Met Pro Leu Leu Lys Asp Met Thr Phe Ile His Glu Gly Asn			
165	170	175	
His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met Arg Met Met			
180	185	190	
Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His Asn Pro Val			
195	200	205	
Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His Glu Asp Ser			
210	215	220	
Gln Val Ala Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg			
225	230	235	240
Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys Val Ile Asp			
245	250	255	
Asn Gln Arg Glu Leu Ser Arg Leu Ser Arg Glu Leu Glu Pro			
260	265	270	

<210> 9
 <211> 244
 <212> PRT
 <213> Mus musculus

<400> 9			
Lys Ala Glu Cys Phe Glu Thr Leu Ser Ala Met Glu Leu Ala Glu Gln			
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Ile Thr Leu Leu Asp His Ile Val Phe Arg Ser Ile Pro Tyr Glu Glu			
20	25	30	
Phe Leu Gly Gln Gly Trp Met Lys Leu Asp Lys Asn Glu Arg Thr Pro			
35	40	45	
Tyr Ile Met Lys Thr Ser Gln His Phe Asn Glu Met Ser Asn Leu Val			
50	55	60	
Ala Ser Gln Ile Met Asn Tyr Ala Asp Ile Ser Ser Arg Pro Asn Ala			
65	70	75	80
Ile Glu Lys Trp Val Ala Val Ala Asp Ile Cys Arg Cys Leu His Asn			
85	90	95	
Tyr Asn Gly Val Leu Glu Ile Thr Ser Ala Leu Asn Arg Ser Pro Ile			
100	105	110	

Tyr Arg Leu Lys Lys Thr Trp Ala Lys Val Ser Lys Gln Thr Lys Ala
 115 120 125
 Leu Met Asp Lys Leu Gln Lys Thr Val Ser Ser Glu Gly Arg Phe Lys
 130 135 140
 Asn Leu Arg Glu Thr Leu Lys Asn Cys Asn Pro Pro Ala Val Pro Tyr
 145 150 155 160
 Leu Gly Met Tyr Leu Thr Asp Leu Ala Phe Ile Glu Glu Gly Thr Pro
 165 170 175
 Asn Phe Thr Glu Glu Gly Leu Val Asn Phe Ser Lys Met Arg Met Ile
 180 185 190
 Ser His Ile Ile Arg Glu Ile Arg Gln Phe Gln Gln Thr Ala Tyr Arg
 195 200 205
 Ile Asp Gln Gln Pro Lys Val Ile Gln Tyr Leu Leu Asp Lys Ala Leu
 210 215 220
 Val Ile Asp Glu Asp Ser Leu Tyr Glu Leu Ser Leu Lys Ile Glu Pro
 225 230 235 240
 Arg Leu Pro Ala

<210> 10
 <211> 249
 <212> PRT
 <213> Drosophila melanogaster

<400> 10
 Asp Glu Ile Thr Leu Leu Thr Leu His Pro Leu Glu Leu Ala Arg Gln
 1 5 10 15
 Leu Thr Leu Leu Glu Phe Glu Met Tyr Lys Asn Val Lys Pro Ser Glu
 20 25 30
 Leu Val Gly Ser Pro Trp Thr Lys Lys Asp Lys Glu Val Lys Ser Pro
 35 40 45
 Asn Leu Leu Lys Ile Met Lys His Thr Thr Asn Val Thr Arg Trp Ile
 50 55 60
 Glu Lys Ser Ile Thr Glu Ala Glu Asn Tyr Glu Glu Arg Leu Ala Ile
 65 70 75 80
 Met Gln Arg Ala Ile Glu Val Met Met Val Met Leu Glu Leu Asn Asn
 85 90 95
 Phe Asn Gly Ile Leu Ser Ile Val Ala Ala Met Gly Thr Ala Ser Val
 100 105 110
 Tyr Arg Leu Arg Trp Thr Phe Gln Gly Leu Pro Glu Arg Tyr Arg Lys
 115 120 125

Phe Leu Glu Glu Cys Arg Glu Leu Ser Asp Asp His Leu Lys Lys Tyr
 130 135 140
 Gln Glu Arg Leu Arg Ser Ile Asn Pro Pro Cys Val Pro Phe Phe Gly
 145 150 155 160
 Arg Tyr Leu Thr Asn Ile Leu His Leu Glu Gly Asn Pro Asp Leu
 165 170 175
 Leu Ala Asn Thr Glu Leu Ile Asn Phe Ser Lys Arg Arg Lys Val Ala
 180 185 190
 Glu Ile Ile Gly Glu Ile Gln Gln Tyr Gln Asn Gln Pro Tyr Cys Leu
 195 200 205
 Asn Glu Glu Ser Thr Ile Arg Gln Phe Phe Glu Gln Leu Asp Pro Phe
 210 215 220
 Asn Gly Leu Ser Asp Lys Gln Met Ser Asp Tyr Leu Tyr Asn Glu Ser
 225 230 235 240
 Leu Arg Ile Glu Pro Arg Gly Cys Lys
 245

<210> 11
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 11
 Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His
 1 5 10 15
 Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile Ser Phe Ser Asp
 20 25 30
 Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu Asn Pro Thr Met
 35 40 45
 Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln Trp Val Gln Leu
 50 55 60
 Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile
 65 70 75 80
 Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu Gln Asn Phe Asn
 85 90 95
 Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg
 100 105 110
 Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile Asn Lys Val Leu
 115 120 125
 Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn Tyr Asp Asn Tyr

130	135	140	
Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile Pro Ile Leu Gly			
145	150	155	160
Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr			
165	170	175	
Leu Glu Asp Gly Lys Val Asn Val His Lys Leu Leu Ala Leu Tyr Asn			
180	185	190	
His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala Pro Pro Leu Glu			
195	200	205	
Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr			
210	215	220	
Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg			
225	230	235	240
Asn His Arg			

<210> 12
 <211> 48
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 12																	
Ile	Arg	Gly	Gly	Thr	Lys	Glu	Ala	Leu	Ile	Glu	His	Leu	Thr	Ser	His		
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Glu			Leu			Val			Asp			Ala			Phe		
20			25												30		
Ser			Ile			Leu			Thr			Arg			Glu		
35			35			40			40			45					

<210> 13
 <211> 47
 <212> PRT
 <213> *Mus musculus*

<400> 13																	
Ile	Lys	Gly	Gly	Thr	Val	Val	Lys	Leu	Ile	Glu	Arg	Leu	Thr	Tyr	His		
1																15	
Met			Tyr			Ala			Asp			Pro			Ser		
20			20			25			25			30					
Phe			Cys			Lys			Gln			Glu			Glu		
35			35			40			40			45					

<210> 14
<211> 48
<212> PRT
<213> Mus musculus

<400> 14
Ile Arg Tyr Ala Ser Val Glu Ala Leu Leu Glu Arg Leu Thr Asp Leu
1 5 10 15

Arg Phe Leu Ser Ile Asp Phe Leu Asn Thr Phe Leu His Thr Tyr Arg
20 25 30

Ile Phe Thr Thr Ala Thr Val Val Leu Ala Lys Leu Ser Asp Ile Tyr
35 40 45

<210> 15
<211> 49
<212> PRT
<213> Dictyostelium discoideum

<400> 15
Val Val Lys Phe Ala Ser Leu Asn Lys Leu Val Glu His Leu Thr His
1 5 10 15

Asp Ser Lys His Asp Leu Gln Phe Leu Lys Thr Phe Leu Met Thr Tyr
20 25 30

Gln Ser Phe Cys Thr Pro Glu Lys Leu Met Ser Lys Leu Gln Gln Arg
35 40 45

Tyr

<210> 16
<211> 77
<212> PRT
<213> Drosophila melanogaster

<400> 16
Leu Thr Arg Ser Ser Arg Asp Glu Pro Leu Asn Phe Arg Ile Val Gly
1 5 10 15

Gly Tyr Glu Leu Arg Gly Val Ala Ile Ala Thr Gly Asn Ala Ala Val
20 25 30

Gly Ile Tyr Ile Ser His Val Glu Pro Gly Ser Lys Ala Gln Asp Val
35 40 45

Gly Leu Lys Arg Gly Asp Gln Ile His Glu Val Asn Gly Gln Ser Leu
50 55 60

Asp His Val Thr Ser Lys Arg Ala Leu Glu Ile Leu Thr
65 70 75

<210> 17
<211> 71
<212> PRT
<213> Homo sapiens

<400> 17
Asn Leu Lys Lys Asp Ala Lys Tyr Gly Leu Gly Phe Gln Ile Ile Gly
1 5 10 15

Gly Glu Lys Met Gly Arg Leu Asp Leu Gly Ile Phe Ile Ser Ser Val
20 25 30

Ala Pro Gly Gly Pro Ala Asp Leu Asp Gly Cys Leu Lys Pro Gly Asp
35 40 45

Arg Leu Ile Ser Val Asn Ser Val Ser Leu Glu Gly Val Ser His His
50 55 60

Ala Ala Ile Glu Ile Leu Gln
65 70

<210> 18
<211> 67
<212> PRT
<213> Homo sapiens

<400> 18
Ile Val Ile His Arg Gly Ser Thr Gly Leu Gly Phe Asn Ile Val Gly
1 5 10 15

Gly Glu Asp Gly Glu Gly Ile Phe Ile Ser Phe Ile Leu Ala Gly Gly
20 25 30

Pro Ala Asp Leu Ser Gly Glu Leu Arg Lys Gly Asp Gln Ile Leu Ser
35 40 45

Val Asn Gly Val Asp Leu Arg Asn Ala Ser His Glu Gln Ala Ala Ile
50 55 60

Ala Leu Lys
65

<210> 19
<211> 68
<212> PRT
<213> Rattus norvegicus

<400> 19
Val Glu Leu Pro Lys Thr Glu Glu Gly Leu Gly Phe Asn Ile Met Gly
1 5 10 15

Gly Lys Glu Gln Asn Ser Pro Ile Tyr Ile Ser Arg Ile Ile Pro Gly
20 25 30

Gly Ile Ala Asp Arg His Gly Gly Leu Lys Arg Gly Asp Gln Leu Leu

35	40	45
Ser Val Asn Gly Val Ser Val Glu	Gly Glu His His Glu Lys Ala Val	
50	55	60
Glu Leu Leu Lys		
65		
<210> 20		
<211> 65		
<212> PRT		
<213> Homo sapiens		
<400> 20		
Val Lys Val Gln Lys Gly Ser Glu Pro Leu Gly Ile Ser Ile Val Ser		
1	5	10
Gly Glu Lys Gly Gly Ile Tyr Val Ser Lys Val Thr Val Gly Ser Ile		
20	25	30
Ala His Gln Ala Gly Leu Glu Tyr Gly Asp Gln Leu Leu Glu Phe Asn		
35	40	45
Gly Ile Asn Leu Arg Ser Ala Thr Glu Gln Gln Ala Arg Leu Ile Ile		
50	55	60
Gly		
65		
<210> 21		
<211> 98		
<212> PRT		
<213> Drosophila melanogaster		
<400> 21		
Met Val Phe Ala Val Val Asp Lys Ala Gly Thr Val Val Met Ser Asp		
1	5	10
Gly Glu Glu Leu Asp Ser Trp Ser Val Leu Ile Asn Gly Ala Val Glu		
20	25	30
Ile Glu His Ala Asn Gly Ser Arg Glu Glu Leu Gln Met Gly Asp Ser		
35	40	45
Phe Gly Ile Leu Pro Thr Met Asp Lys Leu Tyr His Arg Gly Val Met		
50	55	60
Arg Thr Lys Cys Asp Asp Cys Gln Phe Val Cys Ile Thr Gln Thr Asp		
65	70	75
80		
Tyr Tyr Arg Ile Gln His Gln Gly Glu Asn Thr Arg Arg His Glu		
85	90	95
Asp Glu		

<210> 22
<211> 99
<212> PRT
<213> Homo sapiens

<400> 22
Leu Leu Phe Glu Pro His Ser Lys Ala Gly Thr Val Leu Phe Ser Gln
1 5 10 15

Gly Asp Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn
20 25 30

Val Val Thr His Gly Lys Gly Leu Val Thr Thr Leu His Glu Gly Asp
35 40 45

Asp Phe Gly Gln Leu Ala Leu Val Asn Asp Ala Pro Arg Ala Ala Thr
50 55 60

Ile Ile Leu Arg Glu Asp Asn Cys His Phe Leu Arg Val Asp Lys Gln
65 70 75 80

Asp Phe Asn Arg Ile Ile Lys Asp Val Glu Ala Lys Thr Met Arg Leu
85 90 95

Glu Glu His

<210> 23
<211> 97
<212> PRT
<213> Homo sapiens

<400> 23
Ala Met Phe Pro Val Thr His Ile Ala Gly Glu Thr Val Ile Gln Gln
1 5 10 15

Gly Asn Glu Gly Asp Asn Phe Tyr Val Val Asp Gln Gly Glu Val Asp
20 25 30

Val Tyr Val Asn Gly Glu Trp Val Thr Asn Ile Ser Glu Gly Gly Ser
35 40 45

Phe Gly Glu Leu Ala Leu Ile Tyr Gly Thr Pro Arg Ala Ala Thr Val
50 55 60

Lys Ala Lys Thr Asp Leu Lys Leu Trp Gly Ile Asp Arg Asp Ser Tyr
65 70 75 80

Arg Arg Ile Leu Met Gly Ser Thr Leu Arg Lys Arg Lys Met Tyr Glu
85 90 95

Glu

<210> 24
<211> 97
<212> PRT
<213> Homo sapiens

<400> 24
Cys Met Tyr Gly Arg Asn Tyr Gln Gln Gly Ser Tyr Ile Ile Lys Gln
1 5 10 15

Gly Glu Pro Gly Asn His Ile Phe Val Leu Ala Glu Gly Arg Leu Glu
20 25 30

Val Phe Gln Gly Glu Lys Leu Leu Ser Ser Ile Pro Met Trp Thr Thr
35 40 45

Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg Thr Ala Ser Val
50 55 60

Lys Ala Ile Thr Asn Val Lys Thr Trp Ala Leu Asp Arg Glu Val Phe
65 70 75 80

Gln Asn Ile Met Arg Arg Thr Ala Gln Ala Arg Asp Glu Gln Tyr Arg
85 90 95

Asn

<210> 25
<211> 103
<212> PRT
<213> Mus musculus

<400> 25
Arg Leu Arg Ser Val Val Tyr Leu Pro Asn Asp Tyr Val Cys Lys Lys
1 5 10 15

Gly Glu Ile Gly Arg Glu Met Tyr Ile Ile Gln Ala Gly Gln Val Gln
20 25 30

Val Leu Gly Gly Pro Asp Gly Lys Ser Val Leu Val Thr Leu Lys Ala
35 40 45

Gly Ser Val Phe Gly Glu Ile Ser Leu Leu Ala Val Gly Gly Gly Asn
50 55 60

Arg Arg Thr Ala Asn Val Val Ala His Gly Phe Thr Asn Leu Phe Ile
65 70 75 80

Leu Asp Lys Lys Asp Leu Asn Glu Ile Leu Val His Tyr Pro Glu Ser
85 90 95

Gln Lys Leu Leu Arg Lys Lys
100

<210> 26
 <211> 91
 <212> PRT
 <213> *Caenorhabditis elegans*

 <400> 26
 Arg Glu Asp Phe Glu Ile Ile Arg Val Phe Asp Gly Asn Asn Ser Tyr
 1 5 10 15

 Arg Ser Gln Ile Ser Arg Asn Ile Val Val Ala Lys His Val Ser Val
 20 25 30

 Gln Gln Val Arg Asp Ala Ala Leu Arg Arg Phe His Ile Asn Asp Thr
 35 40 45

 Pro Glu Arg Tyr Tyr Ile Thr Gln Val Val Gly Glu Val Glu Glu Glu
 50 55 60

 Ile Leu Glu Asp Pro Val Pro Leu Arg Asn Val Lys Arg Pro Glu Gly
 65 70 75 80

 Lys Arg Ala Gln Ile Phe Ile Arg Tyr Tyr Asp
 85 90

<210> 27
 <211> 129
 <212> PRT
 <213> *Homo sapiens*

 <400> 27
 Ser Ile Leu Val Thr Ser Gln Asp Lys Ala Pro Ser Val Ile Ser Arg
 1 5 10 15

 Val Leu Lys Lys Asn Asn Arg Asp Ser Ala Val Ala Ser Glu Tyr Glu
 20 25 30

 Leu Val Gln Leu Leu Pro Gly Glu Arg Glu Leu Thr Ile Pro Ala Ser
 35 40 45

 Ala Asn Val Phe Tyr Ala Met Asp Gly Ala Ser His Asp Phe Leu Leu
 50 55 60

 Arg His Gly Glu Gly Pro Leu Leu Leu His Leu Ala Ser Pro Val Ala
 65 70 75 80

 Arg Leu Pro Gln Glu Leu Leu Arg Val Arg Glu Glu Gly Ala Pro Phe
 85 90 95

 Pro Gly Ser Arg Pro Gln Gly Gly Arg Leu His Gly His Cys Ser Glu
 100 105 110

 Glu Glu Ala Pro Leu Ala Tyr Arg Ser His Gly Val His Thr Arg Cys
 115 120 125

 Gly

<210> 28
<211> 149
<212> PRT
<213> Mus musculus

<400> 28
Gly Gly Lys Asp Val Ser Ala Glu Ala Glu Ser Ser Ser Met Val Pro
1 5 10 15

Val Thr Thr Glu Glu Ala Lys Pro Val Pro Met Pro Ala His Ile Ala
20 25 30

Val Thr Pro Ser Thr Thr Lys Gly Leu Ile Ala Arg Lys Glu Gly Arg
35 40 45

Tyr Arg Glu Pro Pro Pro Thr Pro Pro Gly Tyr Val Gly Ile Pro Ile
50 55 60

Ala Asp Phe Pro Glu Gly Pro Cys His Pro Ala Arg Lys Pro Pro Asp
65 70 75 80

Tyr Asn Val Ala Leu Gln Arg Ser Arg Met Val Ala Arg Pro Thr Glu
85 90 95

Ala Pro Ala Pro Gly Gln Thr Pro Pro Ala Ala Ala Ser Arg Pro
100 105 110

Gly Ser Lys Pro Gln Trp His Lys Pro Ser Asp Ala Asp Pro Arg Leu
115 120 125

Ala Pro Phe Gln Ala Gly Phe Ala Gly Ala Glu Glu Asp Glu Asp Glu
130 135 140

Gln Val Ser Ala Val
145